

## REMARKS

Upon entry of the present amendment, claims 1-37 will remain pending in this application. Applicant respectfully submits that no new matter is added by the present amendment. In particular, Applicant respectfully submits that the subject matter added to claims 1 and 26 is supported in the Specification at least at paragraph [0050]. The subject matter added to claims 15 and 34 is supported in the Specification at least at paragraphs [0046]-[0047] and in the Drawings at least at Figures 7 and 9. The subject matter added to claim 25 is supported in the Specification at least at paragraphs [0046]-[0047] and [0050]-[0052] and in the Drawings at least at Figures 7, 9, and 10.

Claims 14 and 25 stand objected to under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claims 1-37 stand rejected under 35 U.S.C. § 101 as being allegedly directed to non-statutory subject matter. Claims 1-37 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 6,662,174 ("Shah et al.") in view of U.S. Patent Application Publication No. 2004/0139061 ("Colossi et al.").

### *Interview Summary*

On August 1, 2008, Examiner Dant B. Harriman and Applicants' representative, Mr. Kenneth Eiferman, participated in a telephonic interview. During the interview, Applicants' representative proposed the claim amendments herein. The Examiner agreed to reevaluate the pending rejections in light of the claim amendments and remarks herein.

### *Claim Objections*

Claims 14 and 25 stand objected to under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant has amended claims 14 and 25 so that they are now independent claims. Accordingly, Applicant respectfully requests that the objections to claims 14 and 25 be reconsidered and withdrawn.

***Claim Rejections Under 35 U.S.C. § 101***

Claims 1-37 stand rejected under 35 U.S.C. § 101 as being allegedly directed to non-statutory subject matter. In particular, it is alleged that claims 1-25 are not tied to another statutory class, such as a particular apparatus, and do not transform underlying subject matter to a different state or thing.

Applicant respectfully traverses the rejection. Applicant has amended method claims 1 and 15 to recite that the steps are performed in a computing device. Accordingly, claims 1 and 15 are now clearly tied to another statutory class, namely, an apparatus. Claims 2-13 and 16-24 depend from claims 1 and 15, respectively, and are therefore also statutory. Claims 14 and 25 have also been amended to more clearly recite that the steps are performed in a computing device.

Claims 26-37 are alleged to be directed to a compilation of data without any tangible result. In particular, it is alleged that claims 26-37 merely recite a system providing an “interface” to a plurality of data. It is further alleged that “there is no requisite functionality present to satisfy the practical application requirement nor are there any ‘acts’ which transform the data and/or cause a physical transformation to occur outside the computer (*i.e.* not concrete or tangible).

Applicant respectfully traverses the rejection. According to § 2106 of the MPEP, for a result to be tangible, a claim does not need to be tied to a particular machine or apparatus, and it is not necessary that a claimed process operate to change articles or materials to a different state or thing. The tangible requirement does require that the claim must recite more than a 35 U.S.C. § 101 judicial exception, in that the process claim must set forth a practical application of that judicial exception to produce a real-world result. In this case, the data existing at the finer child level of granularity is transformed through aggregation to data existing at the broader parent level of the granularity. The result of this aggregation is then output to a user. As a real-world example, paragraphs [0048]-[0049] of the Specification note several ways in which monthly entries (January, February, March) for a measure, such as “Value,” can be aggregated to derive quarterly values (first quarter).

Another consideration under § 2106 of the MPEP is whether the claimed invention produces a "concrete" result. Usually, this question arises when a result cannot be assured. In other words, the process must have a result that can be substantially repeatable or the process must substantially produce the same result again. In this case, Applicant respectfully submits that, given similar data at the finer child level of granularity, the claimed process will produce similar results for execution of similar aggregation functions. In other words, the claimed process produces results that are substantially repeatable, given the same inputs.

Further, Applicant understands the rejection of claims 26-37 to be based on the premise that "[m]erely claiming nonfunctional descriptive material, *i.e.*, abstract ideas, stored in a computer-readable medium, in a computer, or on an electromagnetic carrier signal does not make it statutory." Section 2106.01 of the MPEP provides that "[d]escriptive material can be characterized as either 'functional descriptive material' or 'nonfunctional descriptive material.' In this context, 'functional descriptive material' consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of 'data structure' is 'a physical or logical relationship among data elements, designed to support specific data manipulation functions.' The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) 'Nonfunctional descriptive material' includes but is not limited to music, literary works, and a compilation or mere arrangement of data." Section 2106.01 further provides that "[w]hen functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized."

In this case, claim 26 is directed to a system that includes a mechanism for aggregating a measure over a non-additive dimension of a cube, which mechanism includes means for evaluating a parent member for a first account comprising a plurality of first members of the non-additive dimension by aggregating the first members according to a first aggregation function, and means for evaluating the parent member for a second account comprising a plurality of second members of the non-additive dimension by aggregating the second members

according to a second aggregation function that is different from the first aggregation function. Claim 34 is directed to a system that includes a mechanism for aggregating a measure over a non-additive dimension of a cube, which mechanism includes means for providing an interface comprising a plurality of user-selectable elements, each user-selectable element associated with a respective non-additive aggregation function, means for receiving a user selection of one of the user-selectable elements; means for associating the non-additive dimension with the non-additive aggregation function that is associated with the selected user-selectable element, and means for evaluating a parent member by aggregating child members according to the non-additive aggregation function associated with the non-additive dimension.

Applicant respectfully submits that such means impart functionality when employed as a computer component and are therefore functional descriptive material, even assuming that they are descriptive material at all. Accordingly, claims 26 and 34 are statutory. Nevertheless, in order to advance prosecution, Applicant has amended claims 26 and 34 to clearly recite physical components, including a processor and a memory, which clearly place claims 26 and 34 within the defined statutory classes of patentable subject matter, namely, apparatuses. Claims 27-33 and 35-37 depend from claim 26 and 34, respectively, and are also statutory.

Accordingly, the systems recited in claims 26-37 produce a useful, tangible, and concrete result, namely, transforming the data existing at the finer child level of granularity through aggregation to data existing at the broader parent level of the granularity.

For at least the above reasons, claims 1-37 are directed to statutory subject matter. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-37 under 35 U.S.C. § 101.

***Claim Rejections Under 35 U.S.C. § 103(a)***

Claims 1-37 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Shah et al. in view of Colossi et al.

With respect to claims 1, 14-15, 25-26, and 34, the rejection is understood to be based on the premise that Shah et al. teaches the invention substantially as claimed, except for

representing data as a cube as claimed in the preamble. It is alleged that Colossi et al. discloses a system and method for aggregating a measure over dimensions of a cube, the dimensions having a parent member that includes at least one child member, and that the system and method comprise designating some measures as semi-additive, a relational data source, an analytical data service, and a reporting client, and enabling a user to select an additive function with which to aggregate additive dimensions of the cube, wherein the aggregation is at least one of the following: null, average of children, first child, last child, first non-empty, or last non-empty.

Applicant respectfully traverses the rejection. Claim 1, as amended above, recites a method for aggregating a measure over a non-additive dimension of a cube for a first account comprising a plurality of first members of the non-additive dimension and a second account comprising a plurality of second members of the non-additive dimension. The non-additive dimension has a parent member that includes at least one child member selected from the first members and the second members. The parent member is evaluated for the first account by aggregating the first members according to a first aggregation function. The parent member is evaluated for the second account by aggregating the second members according to a second aggregation function that is different from the first aggregation function.

Accordingly, as per claim 1, the non-additive dimension is conceptually subdivided into first and second accounts whose members are aggregated according to different aggregation functions, but whose members are nevertheless members of the same non-additive dimension. In this way, claim 1 recites a method of aggregating different members of a single non-additive dimension according to different aggregation functions.

By contrast, while both Shah et al. and Colossi et al. disclose semi-additive measures that are additive in some dimensions and non-additive in other dimensions (see, for example, column 5, lines 6-7 of Shah et al.), Applicant respectfully submits that neither Shah et al. nor Colossi et al. discloses a method of aggregating different members within a single non-additive dimension according to different aggregation functions. In Shah et al., Applicant understands measures that are non-additive in certain dimensions to be presented in non-aggregated form for those dimensions. For example, column 8, lines 36-42 of Shah et al. states that “if there were a

requested metric relating to monthly sales of product by business unit, the request would be for a three-dimensional cube (business unit x month x metric values). If the sales were not additive across the product dimension a separate two-dimensional array would be requested and returned (as just month x metric values), with the values representing the totals across all business [units].” While Colossi et al. does disclose aggregating measures that are non-additive in certain dimensions using non-additive aggregation functions, Applicant understands Colossi et al. to teach the use of only a single aggregation function in connection with a particular dimension. Thus, Colossi et al. fails to disclose the use of different aggregation functions in connection with different members of a single non-additive dimension.

For at least the above reasons, Shah et al. and Colossi et al. fail to disclose all of the limitations of claim 1, whether considered individually or in combination. In particular, Shah et al. and Colossi et al. fail to disclose at least evaluating the parent member for the first account by aggregating the first members according to a first aggregation function and evaluating the parent member for the second account by aggregating the second members according to a second aggregation function that is different from the first aggregation function. Therefore, claim 1 is patentable over Shah et al. in view of Colossi et al.

Claims 2-13 depend from claim 1 and are also patentable over Shah et al. in view of Colossi et al. at least by reason of this dependency.

Claim 14 is directed to a computer-readable storage medium that contains computer-executable instructions that, when executed, cause a computer to perform the steps recited in claim 1. Accordingly, claim 14 is patentable over Shah et al. in view of Colossi et al. at least for the reasons set forth above in connection with claim 1.

Claim 15, as amended, is directed to a method for aggregating a measure over a non-additive dimension of a cube. The non-additive dimension has a parent member that includes at least one child member. An interface comprising a plurality of user-selectable elements is provided. Each user-selectable element is associated with a respective non-additive aggregation function. A user selection of two of the user-selectable elements is received. For each selected user-selectable element, the non-additive aggregation function that is associated with the selected

user-selectable element is associated with at least one child member of the non-additive dimension. The parent member is evaluated by aggregating the at least one child member according to the non-additive aggregation functions associated with the at least one child member of the non-additive dimension.

The subject matter added to claim 15 is supported in the Specification at least at paragraphs [0046]-[0047], which disclose the exemplary use of drop down menus containing a plurality of user-selectable options. These options are illustrated in Figure 9 as including aggregation functions "Additive," "Null," "Average of Children," "First Child," "Last Child," "First Non-Empty Child," "Last Non-Empty Child," "By Account," "Sum," "Min," "Max," and "Count." As disclosed at paragraph [0047], "[t]he user may designate a dimension as a non-additive dimension by engaging a drop down menu 910a or 910b and selecting one of the included non-additive aggregation functions."

By contrast, as discussed above in connection with claim 1, in Shah et al., measures that are non-additive in certain dimensions are presented in non-aggregated form for those dimensions. Thus, Shah et al. does not disclose the limitations of claim 15, as amended, because no aggregation is performed for dimensions for which measures are non-additive. Colossi et al. does disclose the use of certain non-additive aggregation functions, but, as disclosed at paragraph [0120] of Colossi et al., "[m]easures are defined by one or more SQL expressions . . . . For each measure, a list of aggregations is defined for calculations in the context of a cube model, or cube. Each aggregation in the list specifies an aggregation function, such as SUM, COUNT, MIN, MAX, and a list of dimension [*sic*] in which the aggregation function is applied." Accordingly, rather than allowing the user to select aggregation functions in an interface comprising a plurality of user-selectable elements, as recited in claim 15, the system of Colossi et al. requires the user to programmatically define aggregations using SQL expressions. As noted at paragraph [0009] of the instant Specification, "[a] drawback of user-defined aggregation is that it requires a proficiency in a proprietary or standard language to define logic for aggregating a non-additive dimension. Another drawback is that logic must be defined separately for each non-additive dimension, which may be particularly tedious and time consuming for a cube that includes a

number of non-additive dimensions.” The method recited in claim 15 addresses these drawbacks by avoiding the need to use SQL expressions to define logic for aggregating non-additive dimensions.

For at least these reasons, Applicant respectfully submits that Shah et al. and Colossi et al. fail to disclose the limitations of claim 15, whether considered individually or in combination. Accordingly, claim 15 is patentable over Shah et al. in view of Colossi et al. Claims 16-24 depend from claim 15 and are also patentable over Shah et al. in view of Colossi et al. at least by reason of this dependency.

Claim 25, as amended, recites limitations that are similar in scope to those recited in claim 15. In addition, claim 25 recites additional limitations, including “providing a first interface comprising a plurality of first user-selectable elements, each first user-selectable element associated with a respective account type;” “receiving a user selection of at least two of the first user-selectable elements;” “defining the first and second accounts based on the selected first user-selectable elements;” “associating the first account with the non-additive aggregation function that is associated with the second user-selectable element that was selected for the first account;” “associating the second account with the non-additive aggregation function that is associated with the second user-selectable element that was selected for the second account;” and “evaluating the parent member by aggregating the first members according to the non-additive aggregation function associated with the first account and by aggregating the second members according to the non-additive aggregation function associated with the second account.” Thus, claim 25 recites additional limitations relating to setting first and second accounts whose members are aggregated using different aggregation functions. As discussed above in connection with claim 1, neither Shah et al. nor Colossi et al. discloses a method of aggregating different members within a single non-additive dimension according to different aggregation functions.

Accordingly, for at least the reasons stated above in connection with both claims 1 and 15, neither Shah et al. nor Colossi et al. discloses all of the limitations of claim 25, whether



considered individually or in combination. Claim 25 is therefore patentable over Shah et al. in view of Colossi et al.

Claim 26 recites limitations that are similar to those recited in claim 1. Accordingly, claim 26 is patentable over Shah et al. in view of Colossi et al. at least for the reasons set forth in connection with claim 1. Claims 27-33 depend from claim 26 and are patentable over Shah et al. in view of Colossi et al. at least by reason of this dependency.

Claim 34, as amended, recites limitations that are similar to those recited in claim 15. Accordingly, claim 34 is patentable over Shah et al. in view of Colossi et al. at least for the reasons set forth in connection with claim 15. Claims 35-37 depend from claim 34 and are patentable over Shah et al. in view of Colossi et al. at least by reason of this dependency.

Based at least on the above remarks, Applicant respectfully submits that the currently pending claims are patentable over the prior art of record and requests reconsideration and removal of the rejections under 35 U.S.C. § 103(a).

**DOCKET NO.:** MSFT-2927 / 306959.01  
**Application No.:** 10/777,918  
**Office Action Dated:** June 17, 2008

**PATENT**

**CONCLUSION**

In view of the above amendments and remarks, Applicant respectfully submits that the present application is in condition for allowance. Reconsideration of the application is respectfully requested.

Date: November 17, 2008

/Kenneth R. Eiferman/  
Kenneth R. Eiferman  
Registration No. 51,647

Woodcock Washburn LLP  
Cira Centre  
2929 Arch Street, 12th Floor  
Philadelphia, PA 19104-2891  
Telephone: (215) 568-3100  
Facsimile: (215) 568-3439